Recover: designing a videogame to assist with recovery from PTSD

Eilidh Macleod, Robin J.S. Sloan

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Recover: Designing a Videogame to Assist with Recovery from PTSD

Eilidh Macleod
Independent Researcher
Dundee, DD4 7EU, UK
eilidhjanemacleod@gmail.com

Robin J.S. Sloan
Abertay University
Dundee, DD1 1HG, UK
r.sloan@abertay.ac.uk

Abstract
Recover is a game prototype that was developed to explore the potential of videogames to provide users recovering from PTSD with an alternative form of immersive self-help. The game is presented as a playable concept that focuses on mindfulness techniques whilst aiming to engage and retain users. The concept also includes a companion application for mobile, whilst the main videogame has been designed for use with Virtual Reality (VR) headsets.

Author Keywords
Game design; mindfulness; psychotherapy treatment; PTSD.

ACM Classification Keywords
I.3.7. Three-Dimensional Graphics and Realism: *Virtual reality*. K.8.0. General: *Games*

Background
The concept for the VR game prototype *Recover* was developed following an initial review of the literature and existing digital treatment and recovery methods for Post Traumatic Stress Disorder (PTSD). Many digital health applications and self-help mobile applications were identified, some of which had game-like qualities (most notably SPARX [1]). Others, such as Jane McGonigal's Super Better [2], were clearly designed as

Figure 1: The Recover prototype includes a concept for a mobile app (top), VR (middle), and as an installation piece (bottom).

games to aid with recovery from mental health issues. However, there were few examples of complete, digital game products that explicitly linked the theory behind post-psychotherapy treatment to the principles of game design.

The aim of *Recover* is to explore, through practice-based design research, the capacity for digital games to provide sufferers of PTSD with an immersive game experience that focuses on mindfulness. As a practical research project, the ambition with *Recover* is to demonstrate applied use of game design theory and techniques, whilst also deploying industry-standard technologies and processes to produce a prototype that appears consistent with user expectations of contemporary videogames. *Recover* was developed in Unreal 4, with all original assets produced in Autodesk Maya, Adobe Photoshop, and Substance Painter. The game was developed with Virtual Reality (VR) in mind, and is playable as an Oculus Rift prototype. The game also includes a companion application for mobile, and has been curated as an installation piece (Figure 1).

Recover has not been assessed as a tool for recovery from PTSD. Instead, our research is design-centric and exploratory, informed by design collaboration with mental health academics. We hope to use *Recover* to demonstrate the potential directions that can be taken with videogame design and development in relation to digital mental health solutions. A complete playthrough of *Recover* can be viewed online[1].

Design overview

Due to the focus of the research, most design decisions were influenced by aspects of psychotherapy. An example of this is the Breathing Bridge game mechanic, which was designed to encourage both deep breathing and grounding. With each Breathing Bridge in the game, the player must focus on counting and locating the orbs required to build a bridge to a specific area. They must then use button inputs and follow instructions on the screen encouraging them to take deep breaths. The players are asked to inhale when building the bridge for four seconds, to hold their breath for three seconds when walking on the bridge, then to exhale for four seconds when they reach the other side. This is an example of a design decision within *Recover* that draws upon traditional psychotherapy techniques.

Another example of *Recover's* design that has been influenced by psychotherapy is the deployment of interactive objects that aim to calm the player, by acting as a reminder of common activities that will help manage their mood. This includes requiring the player to move books that have positive messages on their spines, or to jump on the keys of a mini xylophone. Additionally, there are aspects of the environmental design that promote positive thinking or advocate against dwelling on negative thinking. Examples include when the player must interact with a card that states "Happiness is a choice, and you deserve that choice, so choose it for yourself", or when the player is asked to

[1] Video playthrough of Recover available at https://www.youtube.com/watch?v=P6Ue4Ms2V5U

destroy negative thoughts written on a paper plane by making the plane fly away.

Throughout the development of *Recover*, we considered the safety of players within all design decisions. A prime example of this is psychoeducation section, featured in the start screen of the game. This information can also be brought up at any point of the gameplay by pressing the start button on the controller. It was vital that the project acknowledged how patient-specific a PTSD recovery journey can be. We recognised that unilateral treatment of mental health conditions (including PTSD) are not appropriate, and therefore we provided the player with information on where they can receive other forms of help outside of *Recover*. Perhaps the biggest consideration of player safety is the compatible mobile application concept, *Recover Mobile*. Recognising how beneficial mobile applications can be to the recovery of mental health conditions, *Recover Mobile* was designed to serve as a companion to the VR experience of *Recover*. The app has a Help Now feature, and simplified breathing and grounding exercises that, when completed, will earn the player batteries and orbs for use in the VR game.

Audio-visual design

The design of both the visuals and audio is integral to *Recover* as a prototype aimed at users recovering from PTSD. The overall visual theme for the game environment is a pillow fort, which is conceived as a calming and soothing safe space. Props are mainly comprised of homely objects such as books, notepaper, board games, and soft textiles. Colour and light design was carefully considered, as the overarching aim of the game is to 'light up' the environment again. A balance therefore had to be found between making the world dark enough to align with this narrative, whilst also ensuring that the player felt neither lost nor uncomfortable. In the final iteration, warm purple lighting was used to evoke a meditative mood. The colour design of all game objects seeks is aligned with the base colour and lighting scheme, with limited use of contrast. Evoking a sense of calm relied not only on the colour palette used, but also on the use of subtle particle effects and a carefully constructed UI. All sound effects and the soundtrack are selected to complement the soothing visual design. Example screenshots in Figure 2 illustrate the final in-game visual style of the product.

Future work

As a design prototype, *Recover* is now at a stage where the complete game can be played from start to finish. This includes all final in-game assets, interfaces, and menus. Full details of the *Recover* project – including design work, screenshots, and a playthrough video – can be accessed from the project website[2]. Our next steps would concern assessment of the viability of the concept, through discussions with experts and researchers in mental health, in PTSD, and in evaluation of users.

Biographies

Eilidh MacLeod is a recent Game Design and Production Management graduate of Abertay University, and current QA Engineer at Outplay Entertainment. As a

[2] Recover website available at: http://www.eilidhjanemacleod.com/recover

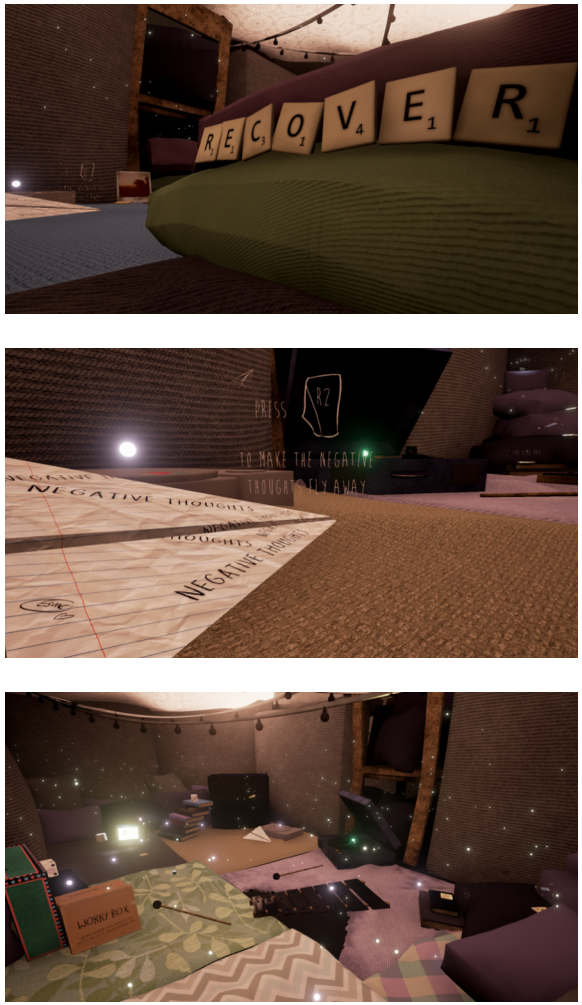

Figure 2. In-game screenshot of *Recover*, showing the overall visual style and environment design, including props, lighting, and particle effects.

researcher and game designer, Eilidh developed the concept and prototype for *Recover*, working not only on the concept but also on scripting and art production. She has a passion for raising awareness of mental health issues. Her portfolio is available from www.eilidhjanemacleod.com

Robin Sloan is a Lecturer and Programme Leader at Abertay University with research expertise in game development and games culture, encompassing game design practices, history and educational games, and games nostalgia. His PhD focused on the design and animation of game characters. His portfolio is available from www.robinjss.co.uk

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